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1 **ABSTRACT OF THE DISCLOSURE**

2 The invention encompasses a method of bonding a first mass to
3 a second mass. A first mass of first material and a second mass of
4 second material are provided and joined in physical contact with one
5 another. The first and second masses are then diffusion bonded to one
6 another simultaneously with the development of grains of the second
7 material in the second mass. The diffusion bonding comprises solid state
8 diffusion between the first mass and the second mass. A predominate
9 portion of the developed grains in the second material have a maximum
10 dimension of less than 100 microns. The invention also encompasses
11 methods of forming a physical vapor deposition target bonded to a
12 backing plate.

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